

# A Multisectoral Dynamic Model for Energy, Economic, and Climate Scenario Analysis

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**How to cite this paper:** Chen, Y.-H. H., Paltsev, S., Gurgel, A., Reilly, J. M., & Morris, J. (2022). A Multisectoral Dynamic Model for Energy, Economic, and Climate Scenario Analysis. *Low Carbon Economy*, 13, 70-111.

<https://doi.org/10.4236/lce.2022.132005>

**Received:** March 14, 2022

**Accepted:** June 27, 2022

**Published:** June 30, 2022

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## Abstract

The MIT Economic Projection and Policy Analysis (EPPA) model has been widely used in energy, land use, technology, and climate policy studies. Here, we provide details of revisions that form the basis of EPPA7, the current version. Key updates include: 1) using the latest Global Trade Analysis Project (GTAP-power) database as the core economic data for the world economy; 2) updating regional economic growth projections; 3) separating extant and vintage capital of the previously aggregated fossil generation; 4) using an innovative approach to calculate the costs of backstop (i.e., advanced) power generation options based on engineering data from the Energy Information Administration; 5) identifying base year biofuel output from existing sectors; and 6) re-parameterizing electric vehicles based on recent studies. Our simulations demonstrate that with widespread mitigation policies worldwide, regions relying heavily on fossil fuel imports benefit from lower global fossil fuel prices when their domestic emissions targets are lenient, but the benefits dissipate when deeper emissions cuts are imposed domestically. We also provide an illustration how the model output can be used to calculate the net present values of unrealized fossil fuel production and stranded assets from idling coal power generation under various policy scenarios.

## Keywords

Economy-Wide Modeling, Climate Scenario, Stranded Assets

## 1. Introduction

In this paper, we introduce the MIT Economic Projection and Policy Analysis (EPPA) modeling framework, and provide details on updates done for EPPA7, the latest model version. We also present a scenario exercise illustrating some of the capabilities of the model. EPPA projects the world as 18 regional trading

# Forwardlooking Dynamic Multisectoral G

**S Marginson**



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